WHAT IS CLAIMED IS:

(currently amended) 1. A system for detecting a structural failure comprising:

a ~~spindled~~ cable;

a set of two or more spindles operable to anchor said cable to said spindle set;

~~multiple~~ two or more said ~~spindles~~ spindle sets anchored to a structure at an interval to ensure ~~a cable~~ break due to over-elongation of said cable upon failure of the structure;

a single signal source coupled to one end of ~~said~~ cable; and

a single signal detector coupled to the opposite end ~~said~~ cable.

(currently amended) 2. The system of claim 1, where ~~the~~ said cable is fiber optic.

(currently amended) 3. The system of claim 1, where ~~the~~ said cable is pre-stretched to increase system sensitivity or increase distance between spindle anchor locations.

(currently amended) 4. The system of claim 1, ~~where a spindle set is used at each cable anchor location.~~ where said cable carries a data signal.

(currently amended) 5. The system of claim 14, where the distance between said spindles within said spindle set is adjustable to remove any slack from the cable.

(currently amended) 6. The system of claim 5, where ~~the~~ said cable is spindled such to produce no net cable twist.

(currently amended) 7. The system of claim 5, where ~~the~~ said cable is spindled such to produce no net spindle torque.

(currently amended) 8. The system of claim 1, where the spindle surface of said spindle has increased friction with ~~the~~ said cable or conductors within said cable, comprised of at least one of the following:

an organic coating;

an encapsulation;

compression;
knurling;
teeth; or
a blade.

(currently amended) 9. The system of claim 1, where ~~the~~ said signal detector is coupled to one of the following user indicators:
a red traffic signal;
a railroad gate
a horn.

(currently amended) 10. The system of claim 1, where multiple said detection systems are placed in series.

(currently amended) 11. The system of claim 1, with redundant said detection systems.

(currently amended) 12. The system of claim 11, where the signal carries a digital data signal and a controller coupled to ~~a~~ said signal source and said signal detector ~~is~~ are operable to respond to diagnostic commands.

(currently amended) 13. The system of claim 12, further comprising an independent backup power source for each said signal source and said signal detector.

(currently amended) 14. The system of claim 12, where ~~the~~ said system is coupled with off-site maintenance and emergency response services.

(currently amended) 15. The system of claim 12, where ~~the~~ said system provides information either automatically or by request via voice or data connection.

(currently amended) 16. A system for detecting structural failure comprising;
a fiber optic cable coupled to a structure;
a multitude of alarm indicator controllers where ~~at least one controller is located midspan of a structure where the~~ said controller monitors for a break in said fiber optic cable;
a multitude of user indicators; and
at least one of said controllers ~~coupled to at least one~~is located within the housing of at least one said user indicator.

(currently amended) 17. The system of claim 16, further comprising an independent backup power source for each said controller, located within the housing of each said controller.

(currently amended) 18. The system of claim 16, where ~~the~~ said controller is operable to respond to diagnostic commands operable to individually test each of said user indicators.

(currently amended) 19. The system of claim 16, where ~~the~~ said controller is attached to said structure and contains an inclinometer ~~attached to the bridge structure~~located within the housing of said controller.

(currently amended) 20. A system for detecting structural failure comprising:
a means for attaching a fiber optic cable to a structure such that ~~the cable~~ failure of said cable indicates a ~~structural~~ failure of said structure;
a means for anchoring said cable to said structure such that ~~the~~ said cable will not slip or creep past an attachment point; and
a means for monitoring for a ~~cable~~ break of said cable.

(currently amended) 21. The system of claim 20, where the means for attaching said cable to said structure will not allow more than 1 inch of slip or creep past ~~the~~ said attachment point with said cable under continuous tension.

(currently amended) 22. The system of claim 20, where the means of anchoring said cable to said structure includes one or more spindle means~~s~~.

(currently amended) 23. The system of claim 22, where said~~the~~ spindle means comprises at least two spindles with ~~a~~said cable wound such that there is no net twist in said~~the~~ cable.

(currently amended) 24. The system of claim 22, where said~~the~~ spindle means comprises at least two spindles with a cable wound such that there is no net torque on said~~the~~ spindles.

(currently amended) 25. The system of claim 22, where said~~the~~ fiber spindling means forms a knot.

(currently amended) 26. The system of claim 25, where said~~the~~ knot is of the constrictor family.

(currently amended) 27. The system of claim 22, where said~~the~~ spindle means includes a surface treatment for increasing friction between said cable and said spindle.

(currently amended) 28. The system of claim 20, where said~~the~~ means of anchoring said cable to said structure includes at least one turn on a pin, retained with encapsulant.

(currently amended) 29. A ~~system~~ means for detecting structural failure comprising:
two or more fiber optic cable segments, each segment coupled to a signal source and signal detector;
a means for anchoring ~~said~~a fiber optic cable to a structure such that the ~~cable~~ failure of said fiber optic cable correlates with failure of said structure~~al failure~~;
where said means for anchoring said fiber optic cable includes a spindle means operable to prevent said cable from slipping past an anchor point and prevents said cable from being broken by said anchor means under tensile forces slightly less than the tensile strength limit of said fiber optic cable;
~~two or more cable segments, each segment coupled to a signal source and signal detector;~~
a means to operate user indicators and controllers along the structure; and
a means to provide electric power to each signal source and signal detector.

(currently amended) 30. The ~~system~~ means of claim 29, where the means for providing electric power is insufficiently sized to continuously power ~~the~~ said user indicators and an energy storage means to sufficiently power ~~the~~ said user indicator are located ~~near~~ within each controller or user indicator.

(currently amended) 31. The ~~system~~ means of claim 29, where a means for monitoring the status of ~~the~~ said energy storage means is coupled to maintenance services via said~~the~~ controllers.

(currently amended) 32. The ~~system~~ means of claim 29, where a means for monitoring the inclination of a structural component is provided ~~by each~~within said controller.

(currently amended) 33. A method for detecting a structural failure comprising:
providing a fiber optic cable attached to ~~the~~ said structure such that ~~the~~ said cable cannot slip past fixed points;
and ~~the~~ said fiber optic cable will be parted by said~~a~~ structural failure; and
providing indication said~~of a~~ structural failure to a user of ~~the~~ said structure.

(currently amended) 34. The method of claim 33, where ~~the~~ said cable cannot slip past any of said~~a~~ fixed points by more than 6 inches.

(currently amended) 35. The method of claim 33, further comprising, providing a spindle to attach said~~a~~ cable to said~~a~~ fixed point.

(currently amended) 36. The method of claim 3~~5~~3, further comprising, providing a spindle set suitable to:
take up any cable slack during installation;
provide a cable winding such that the spindles have no net torque;
provide a cable winding such that the cable has no net twist; or
provide friction between the spindle and the optical fiber adequate to break the fiber.

(currently amended) 37. The method of claim 3~~5~~3, further comprising a knot placed on said~~a~~ spindle.

(Withdrawn) 38. ~~The method of claim 33, where the user indicator is operable by absence of an expected signal~~deleted.

(currently amended) 39. The method of claim 3~~3~~8, where said controller is operable to respond to diagnostic commands operable to individually activate and monitor each of said user indicators~~the signal is comprised of data to operate diagnostic features or monitor the status of the user indicator~~.

(currently amended) 40. The method of claim 33, where ~~the~~ said energy storage is located within~~near~~ said~~the~~ user indicator sufficient to indicate failure to said~~a~~ user for at least 30 minutes;

and maximum electrical power input is slightly greater than quiescent power input.